Safety Advisory Committee
May 1, 2015
1:30 – 3:00 PM

Minutes

Committee Member	Representing	Present
V. Potapenko, M. O. Leimer, J. Willen	Human Resources Advisors	
Blodgett, Paul M.	Environment, Health and Safety Division	
Bluhm, Hendrik	Chemical Sciences Division	
Chernowski, John	Facilities Division	X
Christensen, John N.	Earth Sciences Division	X
Dickerhoff, Darryl	Energy Technologies Area	X
Franaszek, Stephen	Genomics Division	
Giuntoli, Patricia	Computing Sciences Directorate	
Greiner, Leo	Nuclear Science Division	X
Haber, Carl	Physics Division	
Martin, Michael C.	Advanced Light Source Division	X
MacGowan, Elizabeth	Computing Sciences & Information Technology	
Ravani, Shraddha	Life Sciences Division	X
Sauter, Nicholas	Physical Biosciences Division	
Schmid, Andreas	Materials Sciences Division	X
Seidl, Peter	Accelerator Technology and Applied Physics Division; SAC Chair	X
Thomas, Patricia M.	Safety Advisory Committee Secretary	X
von der Lippe, Henrik	Engineering Division	X

Others Present: Irv Davis, Julie Drotz, Howard Hatayama, Mike Johnson, Mike Kritscher, Jack Salazar, Mark Scott, Theresa Triplett, Aaron Ward, Marty White, Mike Wisherop

Comments from the Chair – Peter Seidl

An ESH Peer Review kickoff meeting was held with Chemical Sciences Division Director Ali Belkacem. A meeting is scheduled with Life Sciences Division Director Gary Karpen. The assessment teams will be selected after the topics are established.

EHS Pipeline – Mike Wisherop

The Construction Safety policy has been posted. The Electrical Safety policy and manual will be posted June 1. There will be a presentation about the Fire Control policy at the June SAC meeting. Ross Fisher is looking for researchers who use drones to participate in developing the Aviation Policy.

Revision Type	Documents	Program/Policy	Significance	Status
Electrical Safety Program - Major Revision	RPM, ESH Manual	Electrical Safety Program	A	Development version with technical editing will be posted in the ESH Manual by June 1. Draft versions are posted on the Electrical Safety Web Page.
Work Planning and Control – Phase in	RPM, ESH Manual	Work Authorizations	A	With editing; well communicated via WPC rollout. Next: Lab Director approval, posting.
Fire Prevention – Full program re-write	RPM, ESH Manual	Fire Prevention	B	Working group has signed off on program changes. Draft is with technical editing. COO to sign off on new program before posting in August.
Training Program revisions – clarifications and minor changes	RPM, ESH Manual	ESH Training Program/Policy	D	With editing; user reviews complete; EHS leadership approved.
Aviation Safety Policy -- New	RPM	Aviation	TBD	EHS Management reviewing; Need users to review; Facilities, Earth Sciences, ETA

Revision Type	Documents	Program/Policy	Significance	Status
Fall Protection Program Major Revision	ESH Manual	Fall Protection Program	C	With editing. Changes reflect current practice. SME working closely with users.
Elevated work surfaces Major Revision	ESH Manual	Elevated Work Surfaces Program	C	With editing. Changes reflect current practice. SME working closely with users.
Pressure Safety and Cryogenics Program – Major Revision	ESH Manual	Pressure Safety and Cryogenics Program	C	Working group finalizing changes to document; process flow diagram.
Laser Safety Program -- Major Revision	ESH Manual	Laser Safety Program	TBD (C)	Laser safety committee has provided input and recommendations; SME is drafting.
Change to Radiation Safety Program – Conversion to Rad Con Manual format and addition of new requirements fro DOE O 458.1 CH. 2	RPM/ESH Manual /Rad Con Manual	Radiation Safety, Environmental Radiation	D	RPG is working with the RSC on requirements, language and format of Rad Con manual. 7 Policies posted in RPM.

Reactive Chemicals Management Assessment – Jack Salazar

The accident on campus and incident at the Molecular Foundry were discussed last month. Based on the Chemical Management System inventory and other documents, we know that Environmental Technologies, Life Sciences, and Materials Sciences use reactive chemicals. EHS is organizing an assessment of LBNL management of reactive chemicals, which will include researcher peer discussions of best practices, on-the-job training, inventory, and change management systems and EHS assessment of the effectiveness of LBNL systems and controls. The UC campus may be involved. The assessment will kick off in May. There may be some preliminary results available for discussion at the June SAC meeting.

88” Shock Incident Investigation – Mike Johnson

Mike Johnson is the Research Coordinator at the 88” Cyclotron and was the investigation team leader.

On September 11, 2014, Control Room operators at the 88” Cyclotron noticed that the 480 VAC power supply for the bending magnet would not start up. The interlock chain indicated there was a cooling water flow problem. The electronics technician was dispatched to trouble-shoot the flow switches. The technician LOTOed the circuit, unplugged a flow switch connector, inserted a custom-made jumper, and energized the circuit. The technician had difficulty identifying the cooling water flow path because the pipes were not labeled. The Operations Supervisor came to help, climbed a fiberglass stepladder, and pointed at the pipes. His right hand contacted a pipe while his left elbow brushed against exposed metal on the energized jumper, resulting in a shock. Work was stopped and the shock was properly reported. He was evaluated by Health Services and released with no injury.

An incident investigation team was formed (Mike Johnson, Marty White, Stephanie Collins, Will Waldron, Theresa Triplett, Mary Gross). The team gathered facts through interviews, document reviews, and a walkthrough of the Bldg. 88 basement where the shock occurred.

Division Safety Coordinator Marty White led the team in performing a root cause analysis using the TapRoot methodology. Three causal factors and their associated root causes were identified:

1. Cooling water valves, pipes, flow switches and flow paths for the bending magnet power supply were not labeled. A Division-identified issue pertaining to the labeling has not been resolved due to insufficient resources (assigned person left LBNL without completing task and was not replaced).
2. The electronics technician (person in charge) did not perform the work in a de-energized condition. Management enforcement of the LBNL policy to perform work de-energized whenever possible needs improvement at Bldg. 88.
3. Energized work was not performed with proper safety controls (exposed metal on energized jumper, no electrical safety boundary, inadequate job briefings). The principles of Integrated Safety Management (define scope, analyze hazards, ensure controls are in place before performing work) were not used.

A contributing cause was identified. A cooling water valve that supplied a bending magnet was not properly restored to its normal open position after completion of the summer maintenance shutdown. If this had been done, the troubleshooting on September 11 would not have been required.

The investigation team also considered the issue that the interlock system is decades old and uses 120 VAC, while modern systems use 24 Vdc, which presents a lower hazard. The team concluded that this was not a causal factor because 120 VAC work is routinely performed at the 88" cyclotron with no adverse consequences.

An extent of condition review was performed to identify the potential for similar conditions to exist elsewhere at LBNL. Ownership and responsibility for labeling is an ongoing discussion. The team found labeling issues in 2 of 3 other buildings that were visited. An additional labeling issue was identified in an Occurrence Report from earlier this year. Several other significant safety issues were identified that involve failures in application of Integrated Safety Management.

Other noteworthy lessons from the investigation included:

- Once the incident occurred, the 88" Cyclotron staff responded properly, and they were extremely open and cooperative during the investigation;
- Implementation of the matrix supervision structure needs improvement;
- Close coordination between the Electrical Group Lead and the technicians performing the work is a desirable best work practice;
- The Job Briefing Checklist in ESH Manual Chapter 8, Appendix B, is superb. The checklist was not required for this incident; however, its use would have likely prevented the shock from occurring.

The following Corrective Actions were developed:

- **CA 1.1:** Label Building 88 mechanical and electrical systems (by Sept. 2017);
- **CA 2.1:** Develop and implement an electrical safety checklist for all Building 88 energized and de-energized electrical work (by May 2015);
- **CA 2.2:** Incorporate a Building 88 electrical safety compliance component into the Nuclear Sciences Division self-assessment process to validate effective use of the electrical safety checklist specified in CA 2.1 and adherence to procedure 88-PRO-017 (by Nov 2017);
- **CA 3.1:** Develop and disseminate a Lessons Learned Briefing, as prescribed in 5519(4), *Lessons Learned and Best Practices Program Manual*. (Submitted);
- **CC CA 1.1:** Complete Building 88 LCW and ALCW mechanical system drawings (to be done in conjunction with CA 1.1) and make them accessible to Cyclotron staff in the Control Room (by Sept. 2017); and
- **CC CA 1.2:** Write and implement a general 88-Inch Cyclotron troubleshooting procedure for use by operations, electrical, and mechanical personnel (by Mar 2016).

An Effectiveness Review will be completed by August 2018.

There was a discussion of the investigation process. The Division found the investigation useful. They plan to make greater use of the Job Briefing Checklist. Some issues, such as labeling, were already known and the investigation helped to elevate the priority. Nuclear Science Division is documenting best practices in labeling. They discovered that Facilities has been changing the designation of equipment units when they are replaced, which can cause some confusion in configuration control. There should be a distinction between property asset numbers and system configuration designations. Theresa Triplett from the Office of Contractor Assurance helped to guide the process, clarify definitions, and ensure quality. The investigation followed the traditional process. Good team selection was a key to success. The team was productive and conducted constructive debates. The team worked together throughout and involved others as needed.

CPR Training Policy Changes – Marty White and Jack Salazar

Effective April 1, EHS changed the way staff is enrolled into CPR and First Aid Training. Instead of having staff use Employee Self Service to sign up, EHS Training will enroll staff into the sessions they need. Specifically, EHS Training will:

1. identify who needs the training
2. identify the date they need the training by
3. enroll staff into the training
4. communicate, using email and calendar so each person is informed and understands their options.

This change was made because staff who need CPR and First Aid trainings have not always been able to enroll into the session they need at the time they need it. The previous enrollment process was based on a first-come-first-serve model, and this process didn't differentiate between those who were required to complete the training and those who want the training as an elective. About 60% of those who enroll do so as an elective. EHS Training often has to create additional sessions. Since EHS pays a qualified offsite vendor to provide the training service adding additional sessions comes at a cost. In order to manage the cost and better serve people who are required to complete the training, EHS is prioritizing enrollment as follows:

1. Priority 1: Those who have trainings as a requirement
2. Priority 2: Those who have trainings as recommended
3. Priority 3: Those who want to take trainings as an elective

Staff members who want to take CPR or First Aid as an elective have the following options:

1. **Stand by:** Show up to a scheduled session to see if there is room.
2. **Take the training offsite.** For example, CPR and First Aid training are available through local chapters of the American Red Cross. http://www.redcross.org/ca/san-francisco/take-a-class

3. **Coordinated Group Trainings:** Many groups and Divisions at the Lab already schedule special CPR or First Aid sessions for their staff that they pay for. EHS Training can help schedule these.

The Physical Sciences Workplace Life Committee (PSWLC) and the Safety Coordinators in the Physicals Sciences ALD area are concerned about the changes to the enrollment process for CPR and First Aid classes at the Lab. It is great to have so many colleagues trained in CPR/First Aid because it means that when an emergency occurs, there is a good chance that someone nearby has those skills and is willing to help if needed. This policy change appears to run counter to the Lab's goals that were expressed when Automated External Defibrillators (AEDs) were introduced throughout the lab. As part of the introduction of AEDs, instruction on their use was added to the CPR class. While this training is not required and the AEDs provide instructions, more people are likely to be willing and confident in using an AED in an emergency if they have been trained. There is a concern that the new policy may discourage employees from taking the classes as an elective as they either need to be taken outside work hours (and paid for out of pocket) or employees lose a lot of time going to the class and finding out if a standby spot is available for them.

The response from EHS was that:

- Divisions can always pay for and offer the training.
- EHS will monitor demand and space availability to see if demand is greater than space. If there is a large difference, they will rethink the policy.
- Most classes do have a couple of people who don't show, so it is worthwhile for people who want to take a class to show up even if they can't register in advance.
- EHS will develop a video or one page instruction which will be accessible online as an alternate means to impart the information on how to operate an AED.

Electrical Safety Update – Henrik von der Lippe

Dr. Alivisatos has approved the "Development version" of the new ESH Manual Chapter 8 and the Electrical Safety Manual (ESM). By the end of June 2015, these will become the LBNL policy and safety program. Other Development activities will continue through June 2015, including developing Electrical Hazards options for the Work Planning and Control system (by May 15), developing QEW2 training, and training the QEW2s. Development activities beyond June 2015 will include developing QEW1 training together with the scientific divisions and training all QEW1s by June 2016.

At this time, we are held to compliance with the current ESH Manual Chapter 8; however, it is recommended that we follow the new Chapter 8 and Electrical Safety Manual. The new documents are posted on the Electrical Safety website: http://electricalsafety.lbl.gov/

The meeting was adjourned at 2:45 PM
Respectfully submitted, Patricia M. Thomas, SAC Secretary